

Invention Disclosure

Submitter:

Send the signed original and one copy of this form to Kimberly-Clark Corporation, Patent Department, Neenah, WI. Answer all parts of this form. Two corroborators must understand the invention. The submitter(s) and both corroborators must sign and date the reverse side of this form in blue ink, as well as every additional sheet submitted with it. The last part of this form is recommended when additional sheets are required. If your group has a patent facilitator, preview the original with him or her.

Disclosure No.	18945
Department	
Recommended Attorney	
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PAR Number: 1975

Key Words

ELASTIC, STRETCH, SLIT, DISPOSABLE, ABSORBENT, GARMENT

1. Title

SLIT ELASTIC/STRETCH PANELS FOR IMPROVED STRETCHABILITY AND CONFORMANCE

2. Description (Sign and date each page. Attach pertinent drawings, photographs, etc.)

a. Summary (Should disclose invention in general, nontechnical terms)

This invention discloses the slitting and or cutting of an elastic or stretch panel that creates improved stretch ability and conformance of the material to an object. Preferably this invention can be applied to a disposable absorbent garment that incorporates elastic or stretchable panels that provide fit and conformance to the wearer. Slitting the panel in specific locations can improve the stretch ability and conformance of the absorbent and the garment. Slitting or cutting an elastic/stretchable panel reduces the force to elongate with higher elongation and it creates areas of no material coverage when stretched. This invention can be incorporated into various types of disposable absorbent garments such as disposable diapers, training pants, adult incontinent garments that incorporate stretchable or elastic panels that provide fit to the wearer.

b. Detailed description, including specific embodiments and applicable alternatives, ranges and products, and process/apparatus variations.

The invention of slitting or cutting and elastic/stretch panel in specific regions improves the fit and conformance of the panel to the wearer. The length of the slit relative to the length of the stretch panel impacts the force to elongate and stretch ability of the composite. The location of the slit in the elastic panel is also critical to the fit and conformance of garment. Figure 1 illustrates the relationship of the slit length (S_i) to the panel length (P_i). The relationship of the slit length (S_i) to the panel length (P_i) can best be described as a percent. Example: when the panel length(P_i) is 5.08 cm and the slit length (S_i) is 1.27 cm, the slit length(S_i) is 25% of the panel length (P_i). Increasing the percent of slit length(S_i) to the panel length(P_i) will change the percent elongation, the force to elongate and the area of expansion. Graph1: Illustrates a theoretical stress/strain curves for various slit lengths and non slit stretch panels.

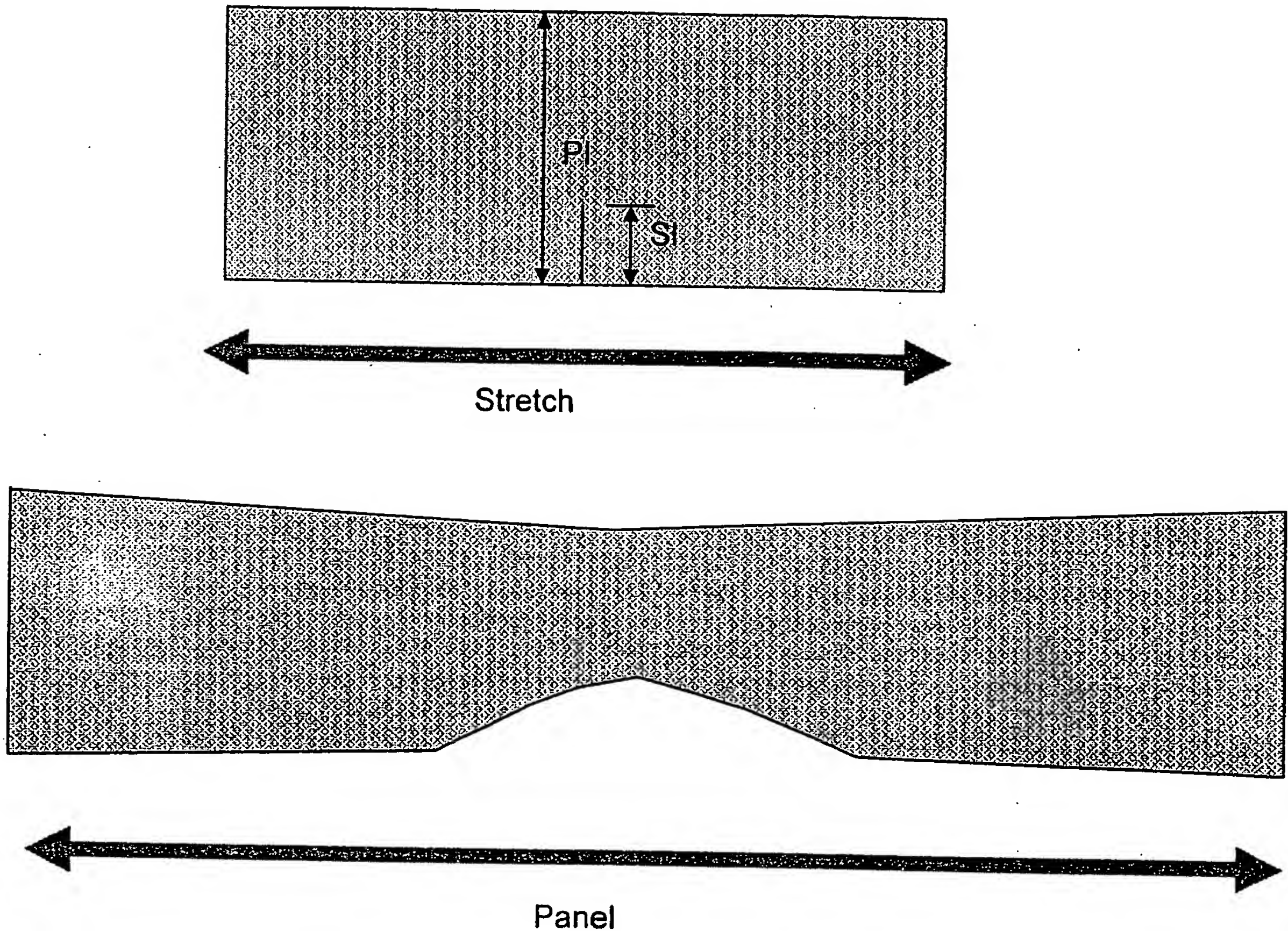
Orientation (angle of the slit), location (position relative to the longitudinal edges of the panel or placement of and insert) and how the slit panel is integrated into design (if the slit is placed on a shorter edge of the panel, the concentration of force to elongate will be greater at the slit region) will affect the stress/strain properties of the panel.

An example of how this invention can be incorporated into a design can be illustrated in Figure 2, A disposable absorbent pant garment that has a front and back stretch panel that extends laterally and longitudinally beyond the lateral and longitudinal edges of the absorbent insert that is attached to the garment side of the front and/or back panels. Option 2: The slit panel is attached to the body side of the garment side of the absorbent insert. Option 3: The slit in the panel is created to an unstretched panel and the panel is then stretched and the insert is attached, or the panel is stretched and then the

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 slit is created and attached to the absorbent insert. Option 4: The panel is slit but not stretched and the absorbent insert is attached but the insert has the ability to stretch or extend and thereby opens the slit during use.

Figure 1: Relationship of Slit Length (S_i) to the elastic Panel length (P_i)



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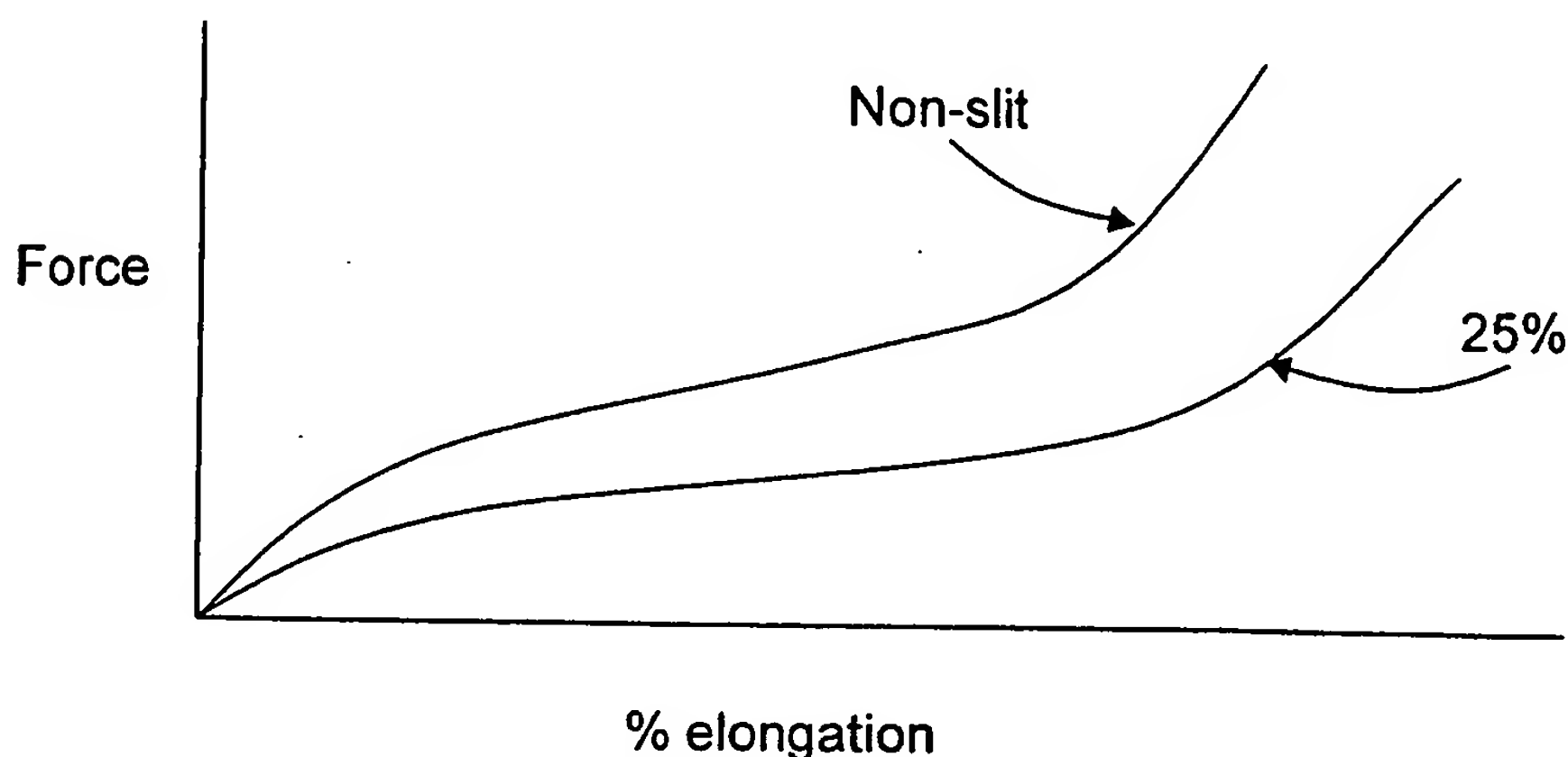
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Graph 1: Relationship of % Slit Length to Panel Length and the Impact on % elongation and Force to elongate



The relationship of the slit length to the panel length can best be defined as a percent. The slit length will always be shorter than the panel length at the location of the slit. The preferred percent slit length is 5% to 75% of the panel length, more preferred, the slit length is 10% to 50%, and the most preferred slit length is 15% to 30% of the panel length.

The preferred application of a slit elastic/stretch panel is in a disposable absorbent garment such as a disposable absorbent diaper, or training pant or adult incontinent garment, but this invention could also be applied to a disposable garment concept that does not have an absorbent as part of its structure.

Figure 2 is a flat plane view, body side up, of an absorbent garment that has a front and back stretch panel that extends laterally and longitudinally beyond the lateral and longitudinal edges of the absorbent insert. The garment side of the absorbent insert is attached to the body side of the front and back panel and the slit in the stretch panel is located on the garment side of the absorbent insert.

Figure 2A is a cross section through 2-2 in Figure 2. The drawing illustrates the slit in the stretch panel and the attachment of the insert to the stretch panel on both sides of the slit. There are several ways/options for the product design to utilize the slit. Option 1: The insert is attached to an elongated stretch panel and the panel pulls the slit together when not in use. During use, the panel is elongated and the slit expands as illustrated in Figure 1. Option 2: The absorbent insert is a stretchable/elastic insert that stretches or elongates when the pant is put on. Option 3: (not shown) The absorbent insert is pleated and attached to the stretch panels. When the garment is put on and worn, the panel elongates and the slit expands. The absorbent insert expands to the extension of the pleats. Placement of the slit on the inboard lateral edge of the front and back panels allows the slit to easily expand to the force of the leg dimension.

Figure 3 is a flat plane view, body side up, of an absorbent garment that has a front and back stretch panel that extends laterally and longitudinally beyond the lateral and longitudinal edges of the absorbent insert. The body side of the absorbent insert is attached to the garment side of the front and back stretch panels. The body side of the stretch panel fits snugly to the body while the absorbent insert is attached to the outside of the panels. The slits are located in the center of the inboard lateral edges of the front and back panel and between the attachment points of the insert to the panels. As in Figure 1, there are several options that can be used to optimize the slit in the front and back panels. Option 1: The front and back panels are elongated and the absorbent insert is attached. The slit can be made prior to elongation or after the insert has been attached the panel has retracted to its non-stretch position (slit comes together). When the garment is put on, the slit expands as the stretch panel stretch during use. Option 2: The absorbent insert is pleated prior to its attachment to the

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stretch panels. Option 3: The absorbent insert is stretchable or extensible. Therefore, during use, the panel elongates and the slit expands without be restricted by the absorbent insert.

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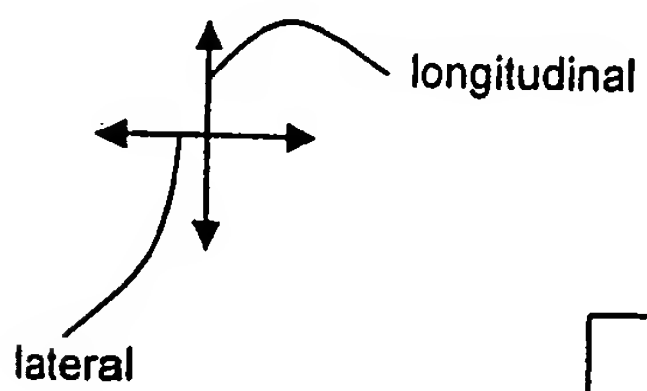
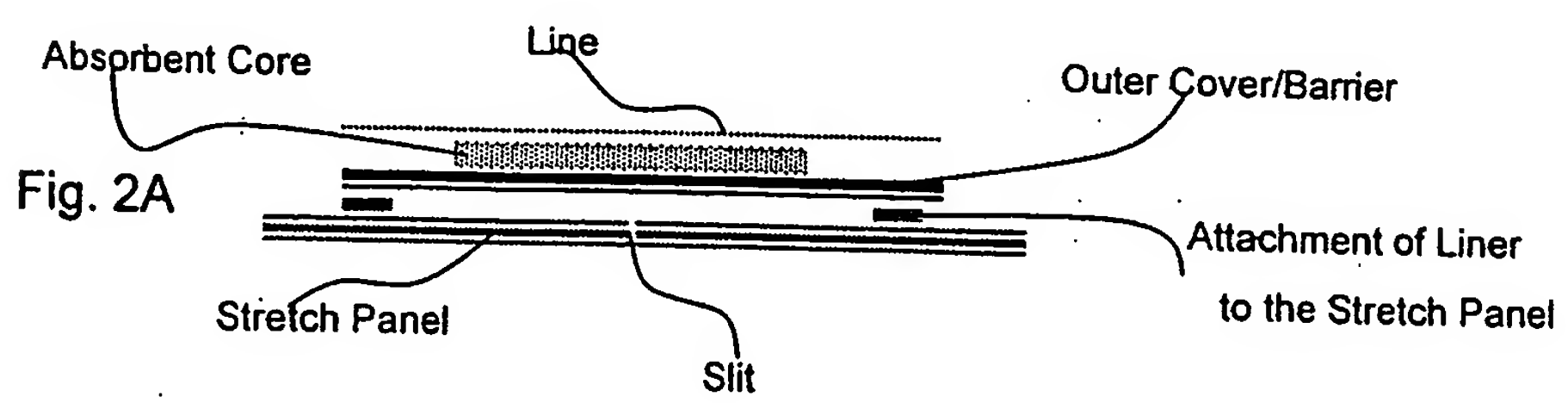
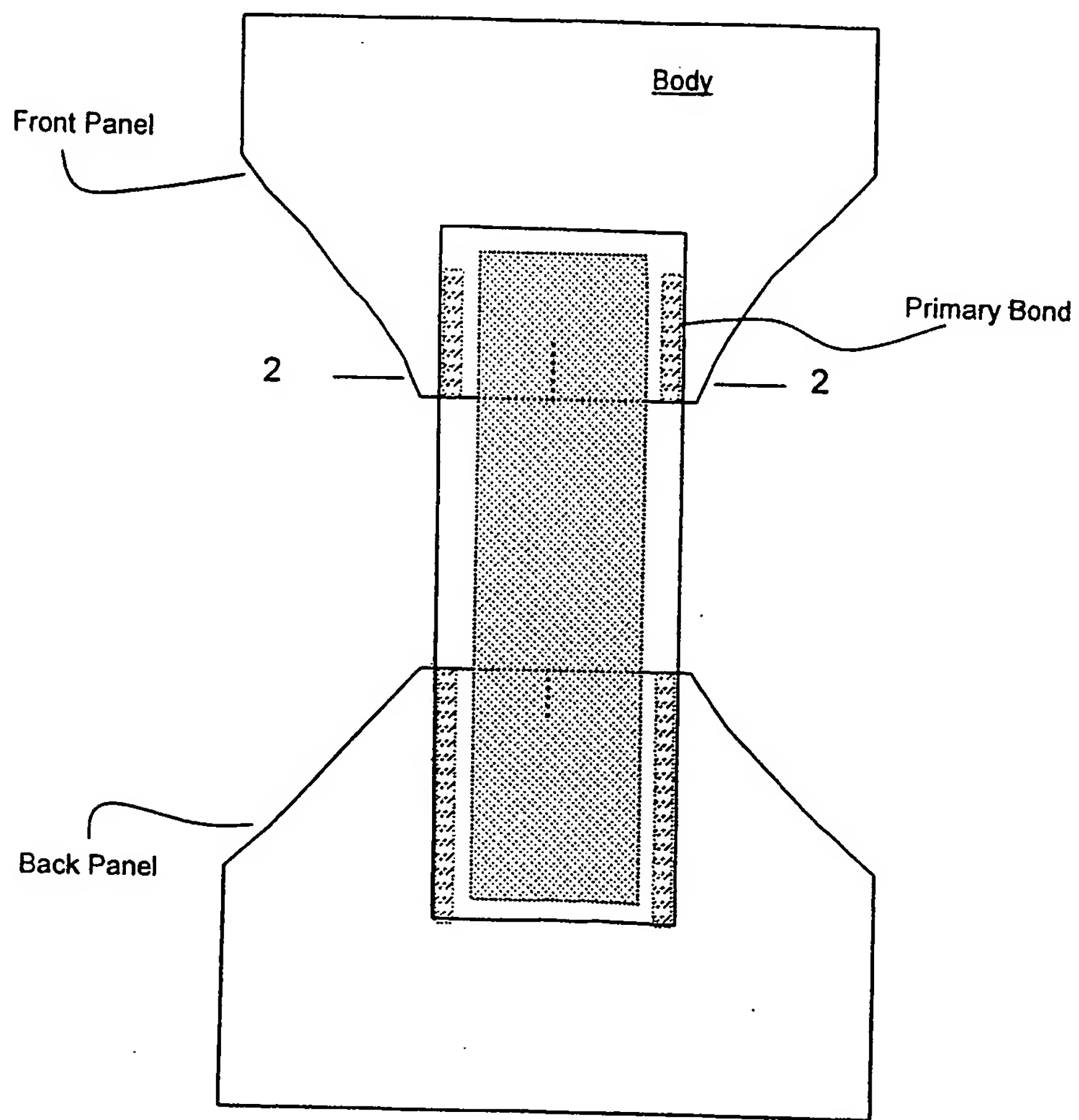


Figure 2: A Retention Portion Attached to the Body Side of the Front and Back Chassis Panels



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Figure 3: A Retention Portion Attached to the Garment Side of the Front and Back Chassis Panels That Have Slits

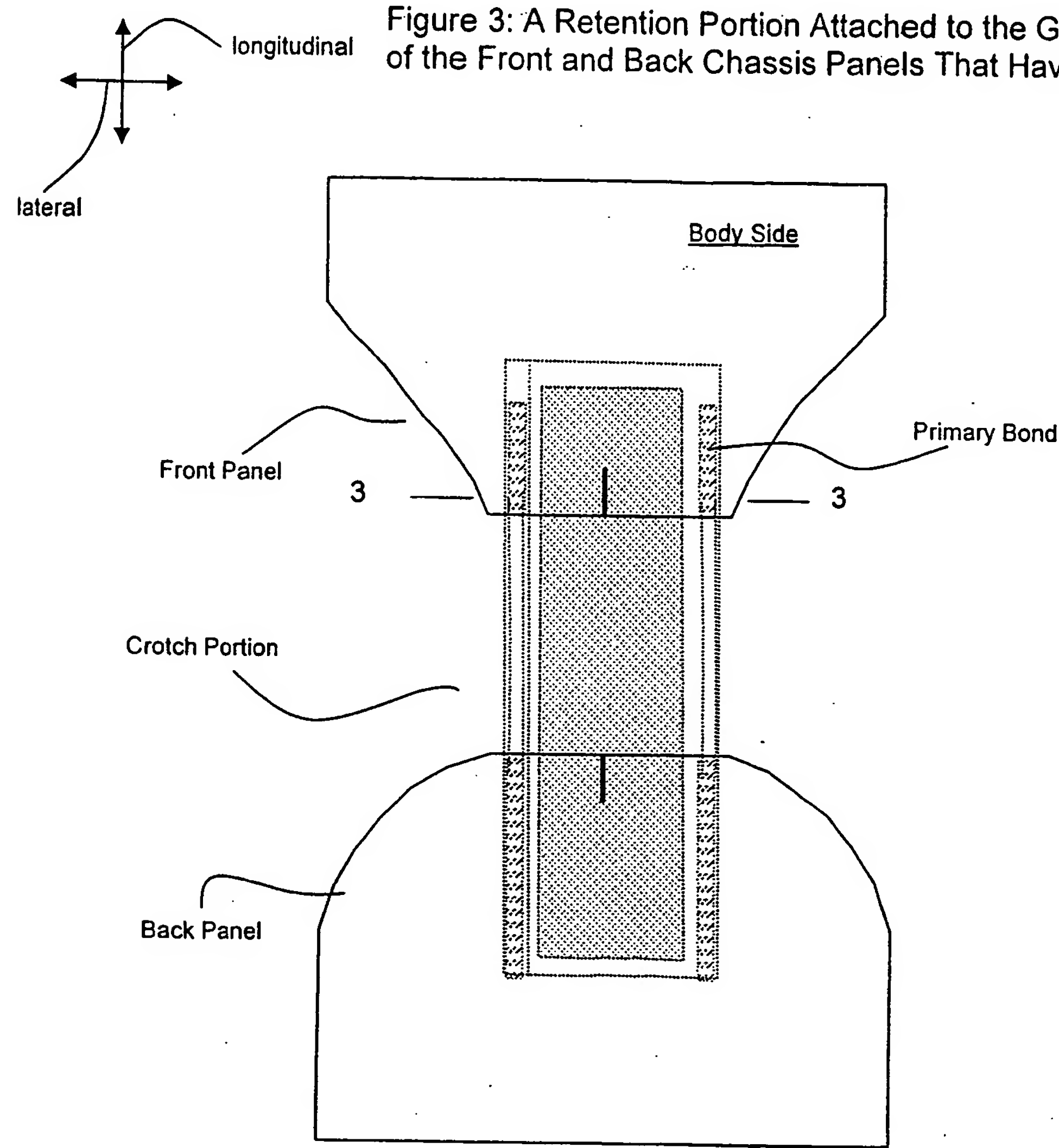


Fig. 3A

Slit Stretch Panel

Attachment of Liner to the Stretch Panel

Absorbent Core

Outer Cover/Barrier

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Applying a slit to a stretch panel when the absorbent insert is attached to the garment side of the stretch panel (insert on the outside) is the most preferred option. The slit eliminates the need for any trim removal and allows the stretch panel to function as a physical barrier between the wet absorbent and the body (separation).

- c. How does the invention distinguish from what has been done in the past and what advantages are obtained? Identify related work done by others (*patents, journal articles, etc.*). Identify other related disclosures of which you may have knowledge, or other work within Kimberly-Clark Corporation within the same area.

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